

**Clean Version of claims 1, 7, 12 and 16  
to be substituted for counterpart claims:**

1) (Amended) An exhaust aftertreatment system for use in a diesel engine comprising:

a) a catalyzed soot filter downstream of the diesel engine and through which the exhaust gases from the diesel engine pass, said catalyzed soot filter in direct fluid communication with the position at which said diesel engine discharges said exhaust gas without any intervening catalyst therebetween;

b) an SCR catalyst downstream of and in direct fluid communication with the catalyzed soot filter and through which the exhaust gases from the diesel engine pass after passing through the catalyzed soot filter; and,

c) a metering valve for metering a reducing agent tending to reduce NOx at elevated temperature in the exhaust gases when passing through the SCR catalyst.

Sub B-28

7) (Amended) An emission purification system for treating exhaust gases produced by a vehicle powered by a diesel engine comprising:

a) a catalyzed soot filter adjacent and in direct fluid communication with said engine without intervening catalysts therebetween, said soot filter of the wall-flow type having gas permeable walls formed into a plurality of axially extending channels, each channel having one end plugged with any pair of adjacent channels plugged at opposite ends thereof, said exhaust gases passing through said channel walls as said gases travel from an entrance to an exit of said soot filter;

b) a valve downstream of said soot filter's exit in fluid communication with a nitrogen reductant and with said exhaust gases after exiting said soot filter;

c) means for regulating said valve to control the quantity of said nitrogen reductant admitted to said exhaust gases; and,

d) a nitrogen reductant SCR catalyst downstream of said valve and said soot filter in direct fluid communication with said soot filter, said SCR catalyst having a set temperature at which said SCR catalyst becomes catalytically active

for a set space velocity if said exhaust gases pass through said SCR catalyst with a set quantity of reductant immediately upon exit from said engine that is higher than the temperature at which said SCR catalyst becomes catalytically active when said exhaust gases pass through said SCR catalyst at said set space velocity with said set quantity of reductant after passing through said soot filter.

- Sub B21
- 12) (Amended) A method for treating exhaust gas emissions produced by a vehicle powered by a diesel engine including light duty diesel engines, said exhaust gases including nitrogen oxides, NO<sub>x</sub>, with nitric oxides (NO) comprising at least 50% of the composition of said NO<sub>x</sub>, and soot containing a VOF, said method comprising the steps of:
- a) providing a catalyzed soot filter downstream of said engine, said soot filter comprising gas porous walls catalyzed on both sides thereof formed into axially extending channels, each channel having a plug at one end and open at its opposite end with any pair of adjacent channels having plugs at opposite channel ends;
  - b) flowing said exhaust gas produced by said engine without any catalyzing device altering the composition of said exhaust gas into channels having open ends confronting said engine which define open end channels, oxidizing said NO through contact with said catalyzed wall surfaces of said open ended channels to produce NO<sub>2</sub> and reacting said NO<sub>2</sub> with said VOF in said open ended channels to reduce said NO<sub>2</sub> to said NO;
  - c) flowing said NO through said walls into channels having plug ends confronting said engine which define closed end channels, and oxidizing said NO by contact with said catalyzed wall surfaces on said closed end channels to produce NO<sub>2</sub>, said exhaust gases having a higher concentration of NO<sub>2</sub> exiting said soot filter than entering said soot filter;
  - d) injecting a set amount of a nitrogen reductant into said exhaust stream downstream of said soot filter;
  - e) providing a SCR catalyst on a monolith; and,

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f) passing said gases into which said reductant has been injected over and in contact with said SCR catalyst whereby said NOx is reduced.

Sub B28

16) (Amended) A method for reducing NOx emissions produced by vehicles powered by light duty diesel and similar engines having exhaust gas operating temperatures as low as about 200EC comprising the steps of:

5 a) increasing the NO<sub>2</sub> concentration present in the NOx gases initially generated by said engine by immediately passing the NOx exhaust gases thorough a catalyst soot filter and without passing said gases through any catalyzing device prior to entering said catalyst soot filter;

b) metering an ammonia reductant into said exhaust gases after said exhaust gases have exited said catalyzed soot filter; and,

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c) directly passing said exhaust gases with said reductant through an SCR catalyst for reducing said NOx.